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mounting to the present moment it has passed a plenty of time, and the electronic part of the mounting has essentially become out of date, we decided to substitute all the electronic part, as well as to produce changes in the mechanical part. At this stage we performed some tests and proving of presented guiding mounting.

ABOUT THE HERITAGE OF THE CRIMEAN ASTROPHYSICAL OBSERVATORY

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Scientific research institute CrAO, the largest astrophysical observatory of Ukraine, well-known in the world, is located in the Crimean mountains on a plateau at the height of 570 m; the radio astronomy laboratory is located on the Southern coast of the Black Sea. The observatory has a modern technical base for research of various astronomical objects; it participates in space projects; the telescope RT-22 and the station «Simeiz-1873" are working in the international network. The observatory has significant objects of the cultural and historical environment at a level of the world heritage. Its scientific activity covers a period in hundred years, therefore, it remains modern, it is interesting to study the historical stages of astrophysics and space research development in the XXth century. The scientific future of the observatory is impossible without preservation of its historical and architectural complex, the astroclimate and local ecology.

INVESTIGATION OF THE EFFECTS OF IONOSPHERIC DISTURBANCES OVER THE EARTHQUAKE PREPARATION ZONES AND THE PHENOMENA PRECEDED TO THE ARRIVAL OF SEISMIC WAVES OCCURRED IN NIKOLAEV IN 2004-2009

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Regular monitoring of the LF signals' amplitude of the radio stations DCF-77 (Mainflingen, Germany) and RBU-66 (Moscow,

Russia) services of the standard frequency and time is carried out in RI NAO in the past several years. Observations are carried out in order to study ionospheric forecasts of earthquakes in the Vrancea seismic zone in Romania and the North-Western Black Sea. Simultaneously with the observations in the low-frequency diapason of the radio spectrum, regular monitoring of the ionosphere is carried out using data of the permanent GPS station MIKL (the GPS receiver Trimble 4700) operating in the microwave range and installed in NAO. Data of other Eurasian permanent GPS stations is also used owing to free Internet access to them.

The significant anomalies of ionosphere have been repeatedly detected in few days before the earthquakes with magnitude $M \geq 5$ as a result of the joint processing of the data banks. The anomalies revealed themselves in displacements of the terminator time (TT) which was determined by the amplitude of the DCF-77 signal relatively to the average curve of the TT and in abnormal changes of the amplitude of the signals during the daytime and night-time relatively to their average values. It was found out that the ionospheric anomalies observed by the GPS and LF data are correlated with a coefficient equal to 0.7. On the eve of the earthquakes, the occurrence of pulsed radio noise was reaffirmed by a broadband pulse amplifier with a Hertzian antenna. Also the pulsed radio noise within the structure of received LF signals was reaffirmed. Appearances of the acoustic-gravity waves with oscillation periods about 20-30 minutes before earthquakes have been experimentally confirmed in the research results.

Furthermore, the readings of the astronomical vertical pendulum clock of Fedchenko construction (ACF) are used for registration of seismic disturbances and the Earth's free oscillations caused by strong earthquakes. The ACF readings are obtained by comparison to the rubidium frequency standard of the NAO service of time. The scale of time of the system is controlled by 1 pulse-per-second (1 PPS) timing signal of the Trimble's Resolution-T GPS receiver accurate to 15 nanoseconds.

Few minutes before the arrival of a seismic wave the effect interpreted by us as a "precursor" has been repeatedly observed. This effect is manifested in a significant reduction of the ACF background readings.